

Application No.: 10/620089  
Docket No.: HP0083USNA

Page 2

### Amendments to Claims

1. (Currently Amended) A dielectric substrate useful for wrapping wire or cable or for supporting electronic circuitry, the substrate comprising:

- a. a polyimide layer having a thickness in a range between and including any two of the following thicknesses: 8, 10, 12, 15, 20, 25, 30, 40, 50, 60, 70, 75, 80, 90, 95, 100, 120, 125, 130, 135, 140, 145 and 150 microns; and,
- b. a high-temperature bonding layer having:
  - i. a thickness between and including any two of the following numbers: 0.25, 0.5, 0.75, 1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 22 and 25 microns;
  - ii. a melting point in a range between and including any two of the following temperatures: 220, 225, 230, 240, 250, 260, 270, 280, 290, 295, 300, 305, 310, 315 and 320°C; and
  - iii. the high-temperature bonding layer comprising a high temperature base polymer comprising poly(tetrafluoroethylene-co-perfluoro[alkyl vinyl ether]) (PFA) in a concentration range between and including any two of the following weight percentages (based upon the total amount of high temperature base polymer): 55, 60, 65, 70, 75, 80, 85, 90, 95, 96, 97, 98, 99 and 100; and optionally blended with poly(tetrafluoroethylene-co-hexafluoropropylene) (FEP) in an amount in a range between (and including) any two of the following weight percentages (based upon total weight of high temperature base polymer): 0, 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 35, 40, and 45, and
- c. an adhesive primer layer in contact with and positioned between the polyimide layer and the high-temperature bonding layer, the adhesive primer layer having an adhesive primer base polymer comprising about 50, 60, 70, 80, 90, 95, 96, 97, 98.99, 99.5 or 100 weight percent poly(tetrafluoroethylene-co-hexafluoropropylene) (FEP), optionally blended with a second copolymer selected from the group consisting of: polytetrafluoroethylene (PTFE), poly(tetrafluoroethylene-co-perfluoro[alkyl vinyl ether]) (PFA); poly(ethylene-co-tetrafluoroethylene) (ETFE) and derivations or copolymers thereof, and wherein the PTM bonding layer has a thickness between and including any two of the following: 0.25, 0.3, 0.4, 0.5, 0.75, 1, 2, 3, 4, 5, 10, 15, 20, 22 or 25 microns.

Application No.: 10/620089  
Docket No.: HP0083USNA

Page 3

2. (Original) A dielectric substrate in accordance with Claim 1 further comprising an exterior layer of polytetrafluoroethylene (PTFE) having a thickness in a range between and including any two of the following: 1, 2, 5, 7, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100, 150, and 200 microns and wherein the exterior layer is adjacent to the high-temperature bonding layer.

3. (Original) A dielectric substrate in accordance with Claim 2 wherein the exterior layer is partially or wholly sintered.

4. (Currently Amended) A dielectric substrate in accordance with Claim 1 further comprising a polyimide-to-metal ("PTM") bonding layer adjacent to the polyimide layer on an opposite side of the high-temperature bonding layer, the PTM bonding layer having a PTM base polymer comprising about 50, 60, 70, 80, 90, 95, 96, 97, 98, 99, 99.5 or 100 weight percent poly(tetrafluoroethylene-co-hexafluoropropylene) (FEP), optionally blended with a second copolymer selected from the group consisting of: polytetrafluoroethylene (PTFE), poly(tetrafluoroethylene-co-perfluoro[alkyl vinyl ether]) (PFA); poly(ethylene-co-tetrafluoroethylene) (ETFE) and derivations or copolymers thereof, wherein the PTM bonding layer has a thickness between and including any two of the following: 0.25, 0.3, 0.4, 0.5, 0.75, 1, 2, 3, 4, 5, 10, 15, 20, 22 or 25 microns.

5. (Currently Amended) A dielectric substrate in accordance with Claim 2 further comprising a polyimide-to-metal ("PTM") bonding layer adjacent to the polyimide layer on an opposite side of the high-temperature bonding layer, the PTM bonding layer having a PTM base polymer comprising about 50, 60, 70, 80, 90, 95, 96, 97, 98, 99, 99.5 or 100 weight percent poly(tetrafluoroethylene-co-hexafluoropropylene) (FEP), optionally blended with a second copolymer selected from the group consisting of: polytetrafluoroethylene (PTFE), poly(tetrafluoroethylene-co-perfluoro[alkyl vinyl ether]) (PFA); poly(ethylene-co-tetrafluoroethylene) (ETFE) and derivations or copolymers thereof, wherein the PTM bonding layer has a thickness between and including any two of the following: 0.25, 0.3, 0.4, 0.5, 0.75, 1, 2, 3, 4, 5, 10, 15, 20, 22 or 25 microns.

6. (Cancelled).

7. (Currently Amended) A dielectric substrate in accordance with Claim 2 ~~further comprising an adhesive primer layer in contact with and positioned between the polyimide core layer and the high-temperature bonding layer, the adhesive primer layer having an adhesive primer base polymer wherein the adhesive primer layer comprises a base polymer~~ comprising about 50, 60, 70, 80, 90, 95, 96, 97, 98, 99, 99.5 or 100 weight percent poly(tetrafluoroethylene-co-hexafluoropropylene) (FEP), optionally blended with a second copolymer selected from the group consisting of: polytetrafluoroethylene (PTFE), poly(tetrafluoroethylene-co-perfluoro[alkyl vinyl ether]) (PFA); poly(ethylene-co-tetrafluoroethylene) (ETFE) and derivations or copolymers thereof, and wherein the PTM

Application No.: 10/620089  
Docket No.: HP0083USNA

Page 4

bonding layer has a thickness between and including any two of the following: 0.25, 0.3, 0.4, 0.5, 0.75, 1, 2, 3, 4, 5, 10, 15, 20, 22 or 25 microns.

8. (Currently Amended). A dielectric substrate in accordance with Claim 4 further comprising an adhesive primer layer in contact with and positioned between the polyimide core layer and the high temperature bonding layer, the adhesive primer layer having an adhesive primer base polymer wherein the adhesive primer layer comprises a base polymer comprising about 50, 60, 70, 80, 90, 95, 96, 97, 98, 99, 99.5 or 100 weight percent poly(tetrafluoroethylene-co-hexafluoropropylene) (FEP), optionally blended with a second copolymer selected from the group consisting of: polytetrafluoroethylene (PTFE), poly(tetrafluoroethylene-co-perfluoro[alkyl vinyl ether]) (PFA); poly(ethylene-co-tetrafluoroethylene) (ETFE) and derivations or copolymers thereof, and wherein the PTM bonding layer has a thickness between and including any two of the following: 0.25, 0.3, 0.4, 0.5, 0.75, 1, 2, 3, 4, 5, 10, 15, 20, 22 or 25 microns.

9. (Original) A dielectric substrate in accordance with Claim 4, wherein the polyimide-to-metal (PTM) base polymer consists essentially of poly(tetrafluoroethylene-co-hexafluoropropylene) (FEP).

10. (Currently Amended) A dielectric substrate in accordance with Claim 6 1, wherein the adhesive primer base polymer consists essentially of poly(tetrafluoroethylene-co-hexafluoropropylene) (FEP).

11. (Original) A dielectric substrate in accordance with Claim 1 being further defined as a wrap for an electrical wire or cable to provide continuous, heat-sealable, electrical insulation.

12. (Original) A dielectric substrate in accordance with Claim 2 being further defined as a wrap for an electrical wire or cable to provide continuous, heat-sealable, electrical insulation.

13. (Original) A dielectric substrate in accordance with Claim 3 being further defined as a wrap for an electrical wire or cable to provide continuous, heat-sealable, electrical insulation.

14. (Original) A dielectric substrate in accordance with Claim 4 being further defined as a wrap for an electrical wire or cable to provide continuous, heat-sealable, electrical insulation.

15. (Original) A dielectric substrate in accordance with Claim 5 being further defined as a wrap for an electrical wire or cable to provide continuous, heat-sealable, electrical insulation.

16. (Canceled).

17. (Canceled).

18. (Canceled).

19. (Canceled).

Application No.: 10/620089  
Docket No.: HP0083USNA

Page 5

20. (Currently Amended) A dielectric substrate in accordance with Claim 6 wherein the high-temperature bonding layer and the adjacent adhesive primer layer have a bond strength greater than or equal to 2, 3, 4, 5, 6, 7, 8, 9, or 10 pounds per linear inch.

21. (Previously Presented) An electrically insulated wire or cable wherein the dielectric substrate of Claim 1 is in a form of an electrically insulative tape and wherein the tape is wrapped around the wire or cable.

22. (Previously Presented) An electrically insulated wire or cable wherein the dielectric substrate of Claim 3 is in a form of an electrically insulative tape and wherein the tape is wrapped around the wire or cable.

23. (Original) An electrically insulated wire or cable wherein the dielectric substrate of Claim 4 is in a form of an electrically insulative tape and wherein the tape is wrapped around the wire or cable.

24. (Original) An electrically insulated wire or cable wherein the dielectric substrate of Claim 5 is in a form of an electrically insulative tape and wherein the tape is wrapped around the wire or cable.

25. (Original) An electrically insulated wire or cable of Claim 2 wherein the substrate is in the form of an electrically insulative tape, wherein the tape is wrapped around the wire or cable in an overlapped fashion by at least 50 to 100 percent.

26. (Original) A substrate in accordance with Claim 1 wherein the polyimide layer further comprises a material selected from the group consisting of carbonates that evolve carbon dioxide, minerals containing water of hydration, and polymers that decompose without producing carbonaceous or other conductive by-products on decomposition.